Discussion Paper

Managing Complex Development Projects: A Systemic Toolkit Based on the St. Gall Management Framework

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1. Abstract

The aim of this paper is to help project managers to enhance their capability of dealing effectively with complex change and development projects. For this purpose, the potential of organizational cybernetics and systems theory to support the management of complexity is explored. The emphasis is on the specific perspective of project organization and leadership. We develop a set of conceptual tools dedicated to the support of actors facing dynamic complexity.

These tools are bound together by an inherent logic. We have tried to outline this cogent logic along the lines of our presentation, and illustrated each tool by referring to the manifold aspects of complex change and development in projects. The application of the tools is illustrated by a state-of-the-art case from the realm of Technical Co-operation, - the Revision of the Urban Master Plan for the City of Addis Ababa, Ethiopia. As the toolkit deals with invariances, it is in principle valid for any complex change-and-development project.

2. Introduction

Project Management is the basic approach to Technical Co-operation (TC). TC sets out to assist developing countries mainly through projects which are jointly defined between 'donor' and 'recipient' country.[1] Today, 'development' is increasingly seen as an issue of managing change. This notion replaces older ideas of development as the transfer of knowledge or of implementation of advanced technology. However, in straightforwardly addressing 'change' per se, TC projects have become much more complex. In fact, coping with complexity has become the main challenge to projects.

Management is the key to mastering complexity.[2] However, classical project management approaches are often of little help for the management of institutional change. Many TC project advisors already employ elements of a systemic management approach, but often in contravention of established procedures and on an adhoc basis. There is a growing disparity between project methods as hitherto standardized and prescribed in procedures and handbooks, and the reality of current project implementation.

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[1] The following thoughts were developed in the context of a project implemented by GTZ, Deutsche Gesellschaft für Technische Zusammenarbeit. At any given time, more than 1000 projects are under implementation by GTZ under the sponsorship of the German government.
[2] Cf. Baecker (1997), p. 45; Schlange (1994); Schwaninger (2000).

There is a necessity to streamline and formalize the principles of project management as applied to organisational change. This will make them more useful and become a means of increasing the effectiveness of current project management.

For this purpose, we shall outline in this paper an economical set of basic and interrelated conceptual tools which capitalize on systemic principles of management.[3] Rather than claiming that we are proposing a comprehensive and possibly rather elaborate approach to project management, we are offering a toolkit which is designed to enhance project managers' ability to deal with complex change and development projects effectively.

3. Primary Processes: Creating Sustained Value

Occidental thinking is grounded in bipolarity, e.g., the notions of cause -> effect and problem -> solution. These are also the basic concepts on which current planning methods are based. With regard to concepts of causality, determinism has played a key role in the Western worldview.[4] Bipolar and deterministic approaches, however, often mislead us into starting at the wrong end.[5]

Circularity signifies that the output of a process is reutilized as an input to that process (directly or indirectly).– There are two possibilities:

Either more of one variable (e.g., product quality) leads to more of the other (e.g., workers' self-esteem)[6]. Or more of one variable (e.g., education and training) reduces the other (e.g., the accident-rate).

Relationships of this kind lead either to self-reinforcing cycles, aka "positive feedback-loops" (if the product of the relationships is positive) or to self-attenuating or self-vetoing cycles, i.e., "negative feedback loops" (if the product of the relationships is negative). The former have a tendency towards destabilization, the latter towards stabilisation. Simplified versions of such cycles are shown in Figure 1. Often, a cycle is made up of more than two variables and relationships (cf. Figure 2). Complex systems are always made up of combinations of both kinds of cycles or loops. In that sense, circularity implies

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[3] The concepts underlying this paper are mainly based on the Management Framework developed at the University of St. Gallen (cf. Schwaninger 1994, Gomez/Probst 1999, Bleicher 1999), Organizational Cybernetics (cf. Beer 1979, 1981, 1985; Espejo/Schuhmann/Schwaninger 1996), and Social Systems Theory (cf. Luhmann 1984, 1997).

[4] Cf. Wagner/Zipprian 1985, Luhmann 1984.

[5] A critique of causal models was delivered e.g. by Musto (1987); for the wider context of development co-operation; cf. also Sülzer / Zimmermann (1996), p. 306 ff.

[6] Cf. Kim 1992. It must be added that there are also non-sustainable processes (vicious cycles). Replacing them by virtuous cycles is one of the great challenges to systemic thinking and practice.

sustainability. In the longer run, the self-reinforcing cycles must always be counterbalanced by self-stabilizing loops. Negative feedback will emerge one way or the other.
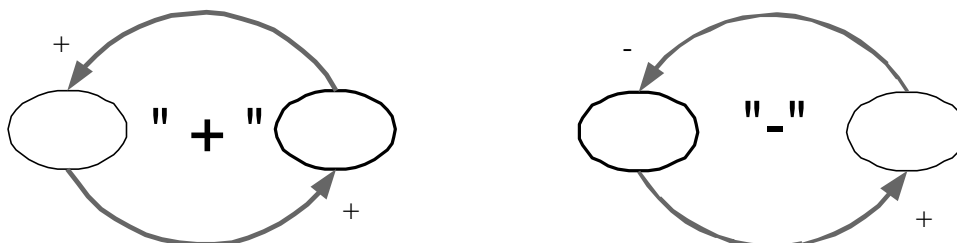

Figure 1: Basic Process Loop

(left: self-reinforcing loop, right: self-attenuating loop)

In analyzing and modelling the organizations we deal with, we develop causal networks which are based on circular loops (i.e., closed chains of events) and which bind together manifold processes.

Circular processes which are value-creating are called 'basic processes'. We can better understand the dynamics of such networks by identifying the primary processes within its causal loops. These primary processes are the 'motors' of the overall system [7] and constitute its potential for development.

The crucial tasks in developing a TC project are to discover or construct - and then reinforce - basic (circular, value-creating) processes:

- *discovering extant processes:* where positive dynamics can be reinforced;

- *constructing new processes:* where virtuous self-reinforcing dynamics can be created through closure (transforming an open causality chain into a loop);

- *reinforcing processes:* leveraging virtuous modes of operation inherent in the process by gradual strengthening and adjustment.

Viewing and modelling the issues of concern in this way helps project planners and managers to focus their attention on those processes which are critical for a system's sustainability and represent points of maximum leverage.

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[7] Cf. Gomez / Probst 1999.

The relationships between components of basic processes are not deterministic. Causality is not rejected, but seen as probabilistic in nature. The emphasis in systemic thinking is on the indeterminism of complex systems[8]. In practical terms, flexibility as a prerequisite for seizing opportunities becomes more important.

Example: Addis Ababa

Issue: Addis Ababa has hitherto been growing in a disorganized manner. As of today (2000) it has 3 million inhabitants, expected to reach anywhere between six and ten million within the next fifteen years . Many people fear that the inordinate pace of growth may become unmanageable. How can *governance* (policy making, urban management) be enabled to orientate and foster future development towards a more virtuous mode? To answer this question, an institutional change project was launched.

In line with the propositions mentioned above, the project team came up with a general model of urban development (Figure 2).
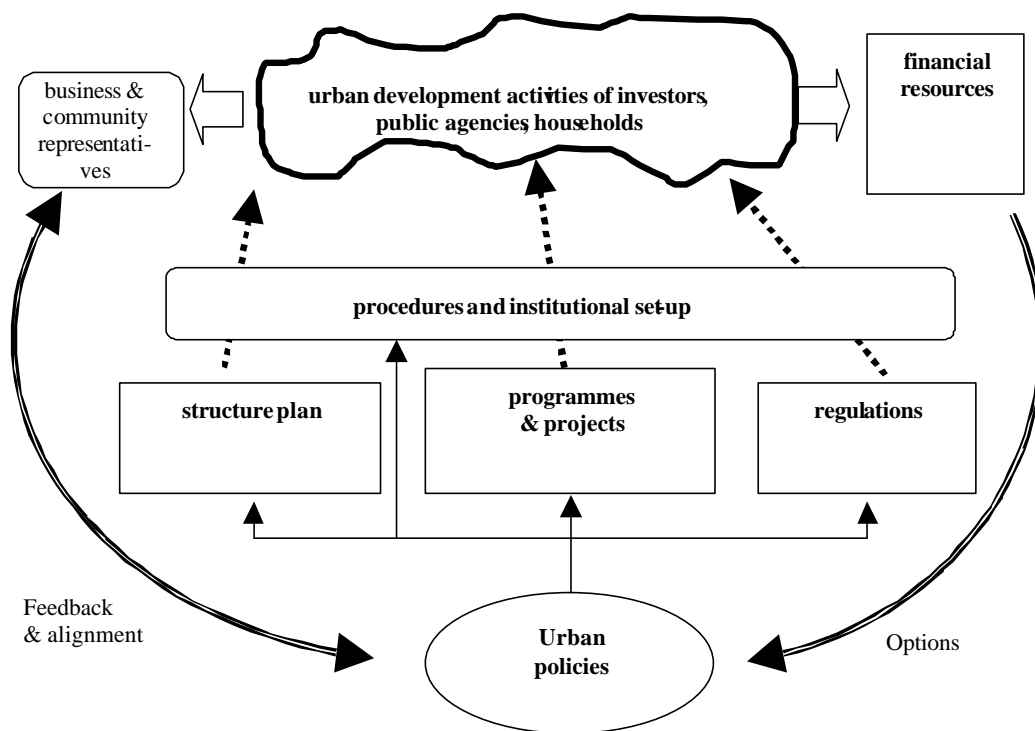

Figure 2: Model of Urban Development

Urban policies influence activities of urban actors through plans, programmes and regulation. These in turn are made effective through the institutional set-up of the city administration. Good policies and effective implementation promote investment, which in turn enhances revenues from taxes and fees. Increased revenues, through a bigger municipal budget, provide more options for policy-making.

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[8] Grint 1997, p. 62.

In a highly abstract version, this model contains two basic loops (Figure 3).
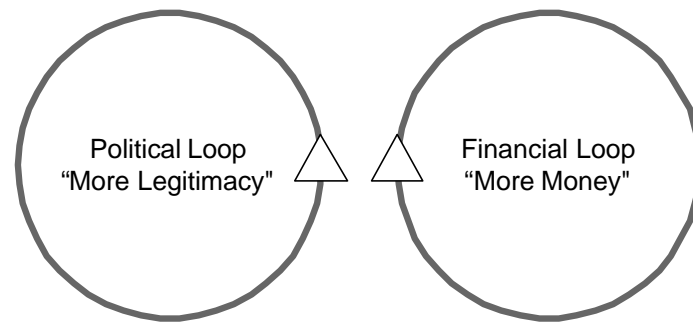
Figure 3: Abstraction – Two self-reinforcing loops

Representing urban management as a dynamic and circular system highlights several important realisations:

- Both of these loops exhibit self-reinforcing circular causalities and, hence an inherent potential for development. They reveal potential win-win-situations for the stakeholders involved.

- Development becomes manifest in increased options (repertory of modes of behavior, possibilities for stakeholders throughout the system to influence the course of events).

- The diagram depicts relational aspects. The focus of optimization is on both components and their interrelationships, often with emphasis on the latter.

- The diagram demonstrates the need for balanced combinations of multidimensional measures, to which many actors can make their contribution.

- Often, political constraints block the formally 'correct' path to problem-solving. In this case, the cause-and-effect model usually leads to frustration (because 'necessary and sufficient preconditions' for intended results cannot be brought about). In contrast, our system model emphasizes already existing, self-sustaining interrelationships.

- The model manifests the multiplicity of opportunities available to enhance virtuous circles. These enable relaxed and creative decision-making.

4. Coping with Complexity: Management for Efficiency and Effectiveness

Project managers today face a growing uncertainty in decision-making, either concerning the project's course of action or the advice to be given to counterparts and clients. Their projects are becoming more and more complex. Hence, managing complexity is an essential skill for today's project managers and advisors. Complexity overload must be avoided, because it leads to irresolution and inefficiency .

The following three instruments will help managers of change projects to deal with this situation.

4.1 Determining one's vantage point: Complexity Sextant[9]

Sometimes, a project manager might seem to be overwhelmed by day-to-day-problems. In other situations, current activities may appear at first glance to be "under control", but their long-term orientation and benefits are nevertheless unclear. Complexity overload is at the root of the problem in both cases. We usually experience complexity in two dimensions:

- The first dimension relates to the time-horizon involved; from day-to-day management to long-term planning issues

- The second dimension relates to the scope of action; from the individual's activities to those of the whole system.

By combining these two dimensions we can establish a continuum between:

- long-term ("planning") issues related to the whole system on the one hand, and

- short-term ("day-to-day" management) issues related to the individual actor, on the other.

In Figure 4 this continuum is shown as a diagonal in the matrix made up of two dimensions: time (vertical) and scope of action (horizontal).

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[9] The term ´sextant´ is used in analogy to maritime navigation, where the sextant is an instrument to ascertain the position of a ship.
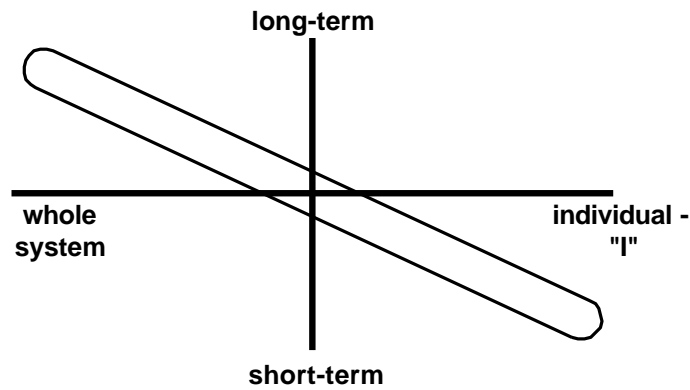
Figure 4: Complexity Sextant

The Complexity Sextant allows project managers to identify their respective vantage point in terms of complexity and helps them to see "where uncertainty hurts most". [10] This is usually a function of the current phase of a project , but it can also depend on the specific nature of the project. By focusing structuring efforts on critical areas of uncertainty, actors are able to avoid complexity overload and to manage more effectively and efficiently. [11]

Example: Addis Ababa

In the first few months of the project, uncertainty was mainly experienced with regard to the overall and long-term issues (Position A in Figure 5). What should be the mid-term goals of the project? How would the political environment evolve over the project's lifetime? For two months, the project management team focused its energies on structuring these complexities, almost entirely neglecting the current activities.

Once the model (Figure 2) and the strategic design of the project were in place, its leaders' experience of uncertainty shifted to the here and now. The new, pressing issue was: How can the multitude of current tasks be coordinated and achieved efficiently? Consequently, the management team concentrated upon managing (namely structuring) day-to-day activities in detail (position B in Figure 4). This was possible and efficient, because relative certainty had been established at the other end of the continuum. It is possible however, that over time the management focus will again shift to other positions on the continuum.

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[10] This continuum relates to the typical managerial situation of TC advisors as managers of change projects. Complementary to it, the continuum from the lower left to the upper right quadrant can lead to significant insights concerning the individual self-development of an agent.

Throughout the lifetime of a project one can expect a kind of pendulum swing between the polar positions of the continuum. Those in charge should ascertain where the uncertainty currently lies and adjust their management priorities accordingly.
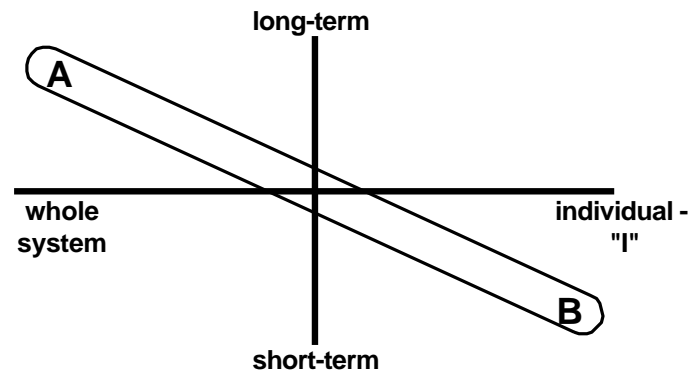

Figure 5: Complexity Sextant - Addis Ababa case

4.2. Distributed management of complex issues: Recursive structure

Typically, a project management is concerned with three organisational levels:

- the overall organisation into which it is embedded

- the project for which it carries overall responsibility, and

- its sub-projects (or task groups).

Traditional management practice treats this as a hierarchy in that the overall organisation fully controls (or: is meant to control) the project, which in turn is supposed to control its sub-projects. However, in increasingly complex projects the issue of control becomes more and more of a bottleneck: while the subordinate unit does not get the decisions it expects from its superior level, the latter does not receive a sufficient supply of the detailed information which it requires from the sub-ordinate level.

Systemic thinking counters this vicious circle with the principle of recursion: each primary unit (basic unit with its regulatory capacity) is perceived as a 'whole' system in its own right, while at the same time being part of a more

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[11] For example: In the design phase, advisors find their situation rather in the quadrant above to the left. For projects the strategy of which is clear and the focus on logistical tasks, the situation will rather be mapped in the quadrant at the lower right.

comprehensive whole. So we conceive of projects as "wholes in wholes in wholes", or systems within systems. Each level should be managed for autonomy and sustainability, in such a way that it contributes, at the same time, to the sustainability of the larger whole. [12]

Control and organisational intelligence are thus no longer centralized at the 'head' of the organisation. They are, on the contrary, distributed throughout all of its levels. This avoids the bottleneck described above. In this way, recursive structuring and control [13] form a 'master strategy' for coping with complexity: Control from above is replaced with self-organisation. Limited resources available for management (control) can be used more effectively: a structural context is created which avoids complexity overload and therefore reduces strain on the managers and management teams of projects.
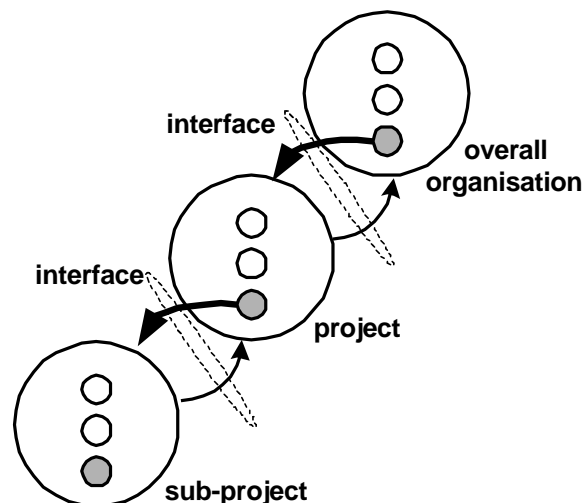

Figure 6: Recursion Model

To manage each level in the interests of autonomy and sustainability means providing it with its own "identity" and structure enabling it to manage, from start to finish, the processes for which it exists. Also, the principles of systemic management laid out in this paper apply equally to all of these organisational levels.

Furthermore, the project management's attention should focus primarily on the interfaces between the levels of recursion. It will neither try to interfere directly in the overall system unnecessarily, nor will it micro-manage the sub-projects.

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[12] Cf. Espejo / Schuhmann / Schwaninger 1996
[13] Control: in German "Lenkung". Control has two components: regulation (based on feedback; "Regelung") and steering (based on feedforward; "Steuerung").

With regard to the interface located 'upstream', project management firstly acknowledges the need for the project to contribute to the distinctive needs and objectives of the overall system. These goals are derived from the need to maintain the overall system's primary processes intact. The overall system's management in return acknowledges the need to structure the project as an autonomous unit within that system. Interaction between the project and the representatives of its superior level of recursion is to a large extent concerned with balancing the project's contributions vis-à-vis both the needs of the overall system and its own needs for autonomy. Often, this interaction revolves around the drafting and the subsequent interpretation of the written mandate and terms of reference given to the project, which can therefore be treated as the main interface between the two levels.

Looking 'downstream', the project management will as far as possible make use of management by objectives, leaving the internal control of the sub-projects in the hands of their respective forces of self-organization. In this case, the task negotiations and assignments to sub-projects represent the interface. However, all the activities of sub-projects must contribute to goal attainment at the level of the project.

Example: Addis Ababa

The three recursion levels in this case are (cf. Figure 7):

- *Overall system:* The city of Addis Ababa with the city administration as the executive regulator

- *Project:* The institutional change project. The project organisation is a self-contained unit which manages its affairs (the value-creating process), by means of its own budget. It has developed its own "organisational identity", in separate offices, with its own staff, rules, goals, etc. In order to secure both the required degree of autonomy as well as clarity about its expected contribution to the overall system's needs, the project management conducts an on-going negotiation with the top city officials on the interpretation and further development of the project's 'mandate' and resources assigned, which are part of its terms of reference.

- *Sub-projects:* The project's internal subdivisions disregard sectoral or departmental boundaries. Instead, task groups are established to deal with specific real-life 'themes' (e.g. housing), working on them with a cross-sectoral approach. These groups interact directly with the total project environment so that they are confronted with the whole of the environmental complexity related to the respective theme they are working on. The groups are expected to achieve comprehensive benefits with regard to real-life concerns, as a direct output of the overall project.

The interfaces between project and sub-projects are embodied in task assignments which specify targets to be achieved. The groups are equipped with the resources and decision-making power needed to organize the achievement of their objectives with high degrees of autonomy. The project management's control (via the interface mentionned above) is essentially concerned with these targets, to a great extent disregarding the internal affairs of the groups.

Project's ToR

City of Addis Ababa

MPRP

Task Assignments

task group
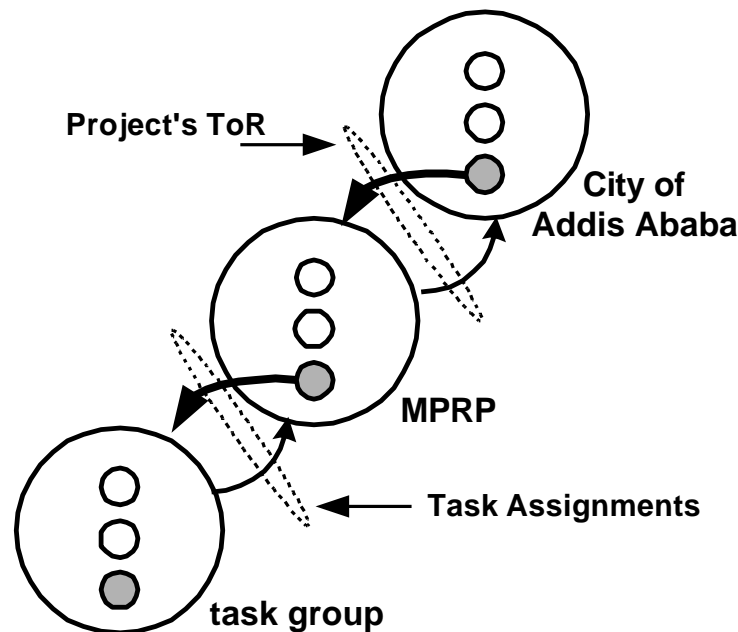
Code: ToR Terms of Reference

Figure 7: Recursion Model - Addis Ababa case

4.3 Criteria of Performance: Three-level Model of Management

In practice, the performance of projects is often judged merely by their achievement of short-term outcomes such as immediate benefits and costs for target groups. However, a circumspect project management must reconcile the short and the long range perspectives.

For a unit to achieve excellent performance, its management must simultaneously meet criteria of success at three logical levels of management:

- *operative management – "efficiency"*

- *strategic management – "effectiveness"*

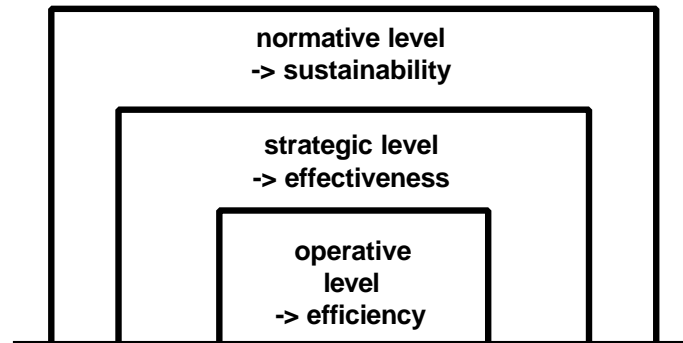- *normative management – "sustainability".*

Figure 8: Three-level Model of Management

The distinction between these three logical levels of management (Figure 8), is based on their specific referents:

- *Operative management* is about the *realisation* of a project. The goal is excellence in its execution, leading to high standards of *value* generated "here and now", - for the relevant stakeholders, i.e. , in terms of value for clients, sponsors and staff, social and ecological benefits, but also in terms of the productivity (cost-benefit-ratio) achieved. Therefore, the overall criterion of operative performance is *efficiency*.

- *Strategic management* is about the *orientation* of the project within a longer time- and wider space-related horizon. Here, the focus is on building *value potentials*, i.e., the prerequisites which enable generating value in the long run. The respective control parameters are critical success factors to be mastered (e.g., knowledge of the target groups' and partner organisations' fundamental issues or problems) and core competencies (e.g., advisory and implementation capabilities coupled with collaborative capabilities). In sum, the overall criterion of performance from the strategic perspective is *effectiveness*.

- *Normative management* is about the *founding principles* of the project or-ganisation. The purpose of normative management is to ensure the *viability* and *development* of the project. The principles of normative manage-ment embody the ethos of the project, and they are largely invariant over time. The ethos, the vision, as well as structural and cultural properties

characterizing a project organisation, indicate how viable that project is. The systemic view implies that the viability of a project can only be maintained if it is aligned with the larger whole into which it is embedded, i.e., as long as it creates a net benefit to that larger whole. Otherwise, the identity of the project must be developed (adjusted) further. In sum, the overall criterion of performance from the view of normative management is *sustainability*.

Each one of these levels has its own goals and logic, and they need to be dealt with in their own language. There is a *pre-control* relationship between these three levels, whereby the superior levels create preconditions and framework for the lower levels. Furthermore, one can expect contradictions between the goals of the three different levels and paths to achieving them.

The utility of the Three-level-Model for project managers is twofold. On the one hand, it helps to sort out the often complex and somewhat contradictory issues of management by structuring them and concentrating on the *essential criteria of success*. On the other hand it provides a blueprint for the *resolution of conflicts*, which often arise from contradiction or competition between the different logical levels .

More specifically, the Three-level-Model can help the project team

- to simultaneously ensure efficient operations, effective support of partners and a sustainable mode of value creation;

- to make sure that long-term issues are pursued early and consistently;

- to ensure coherence in its efforts and strike a balance between seemingly contradictory targets;

- to design and redesign the project in such a way that problem-solving capabilities are constantly enhanced in both the 'client system' and the 'advisory system' (cf. 6).

For a virtuous management on the basis of the Three-Level-Model it is often advisable to use dynamic simulation models (cf. Schwaninger 1997) or evolutionary models (cf. Allen 1997).

Example: Addis Ababa

The project leaders shared an experience from earlier cases. Given the many aspects which impinge on a project, team discussions are often confusing, and decision-making tends to be extremely cumbersome and time-consuming. In the end the interests of the long term are often sacrificed for a few short-term advantages, be-

cause these are more tangible and seem to correspond to the immediate needs of stakeholders.

In the change project, managerial issues are dealt with by distinguishing between and balancing out all three logical levels.:

- *Operative level:* The goal is to steadily create manifest value for various target groups in the City of Addis Ababa. The project management ensures that - despite all complications and its limited resource base - the project organisation produces a stream of visible benefits for its stakeholders, - clients in particular.

- *Strategic level:* The goal is to build up and cultivate value potentials. These reside, for example, in team development and training within and outside of the project organisation; in organisational rearrangements to strengthen the city administration's implementation capacity for the project's propositions; in developing collaborative relationships with business and communities; and in constantly developing the project's resource base and space for manoeuvre in the political sphere.

- *Normative level:* The goal is to ensure the viability and further development of the project or, respectively, its main propositions. The project develops its distinct ethos, which is represented both explicitly - e.g., in a mission statement - and implicitly through the living example of the project management's working behaviour. On this basis, the project reaches out to the city administration and the public at large in order to foster a culture of pro-active problem-solving and result orientation, as well as an ethos of collaboration with stakeholders. It also promotes the respective institutional changes for collaborative decision-making on urban issues.
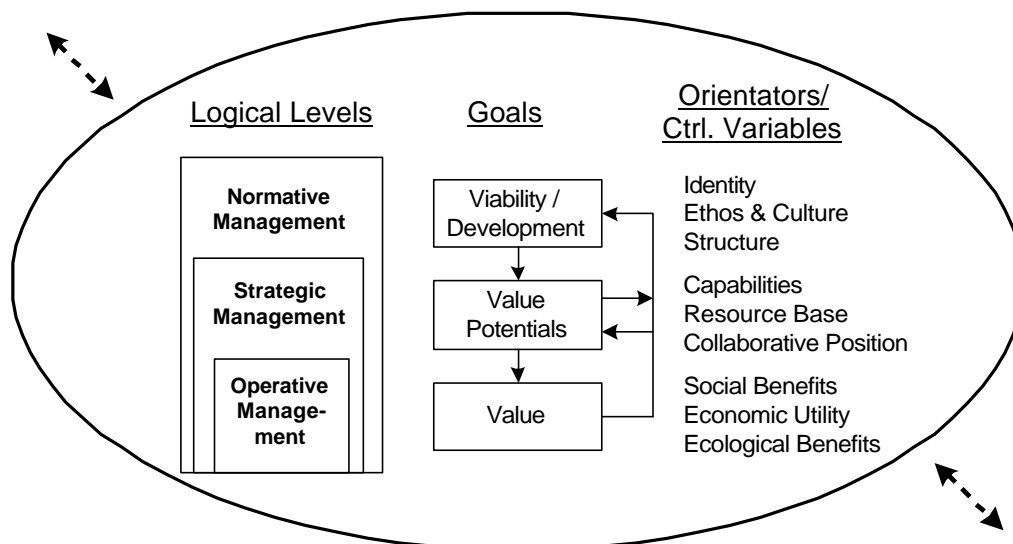

Figure 9: Three-level Model of Management - Addis Ababa case

4.4 Recursive Management: Synthesizing Recursion and Three-level Model

The principles of systemic management and the conceptual tools presented in this paper *apply to any primary unit at any level of recursion*. With respect to the Three-level Model, this can be visualized as follows:
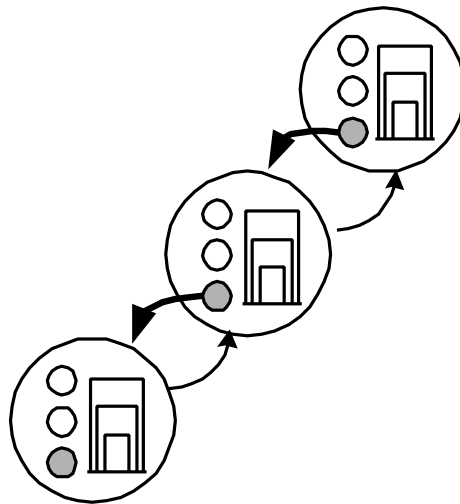
Figure 10: Model of Recursive Management

This diagram illustrates the fact that all three logical levels of management – operative, strategic, normative - are recursive functions inherent in each whole - project, super-project, sub-project, etc. – provided that these are to be conceived of as viable units. In other words, not only an operative management for efficiency, but also strategic and normative management are functions to be distributed recursively across the whole system. We shall recur to this theme in the following section.

5. Project as Adaptive Process: Process Control Model

Traditional planning and management approaches are rather static. They often fail to take into account either changes in the project's environment or the internal dynamics of the project organisation, producing a constant mismatch between 'what is formally planned' and 'what really needs to be done'. To make planning and management more flexible and adaptive, the notion of

'process orientation' has been employed. However, this notion is seldom clearly defined, which often adds to confusion and, consequently, the complexity overload of those involved in projects. How can we make the concept of 'process orientation' operational in a way ensuring that it becomes an effective tool of project management?
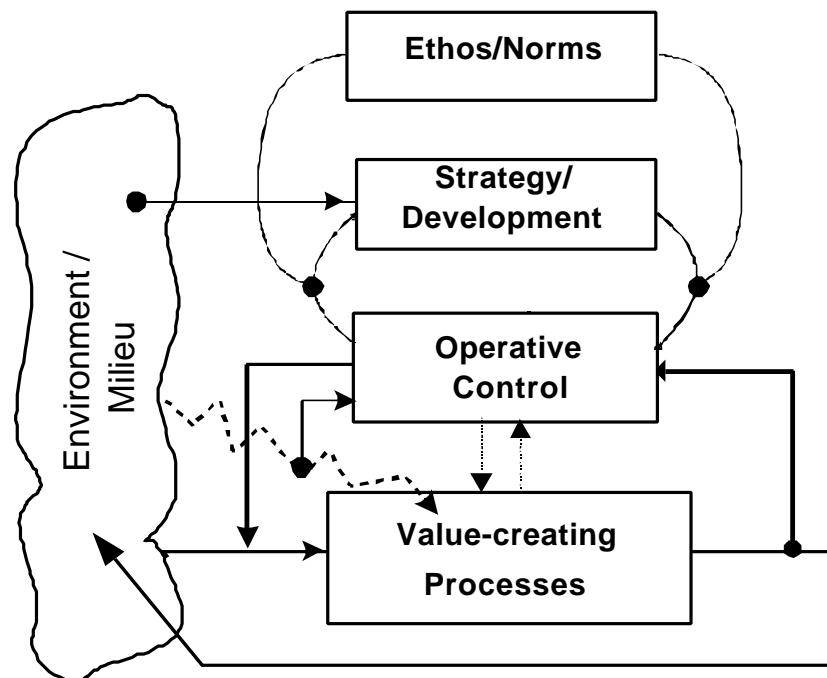

Figure 11: Process Control Model[14]

To manage a project as an evolving process requires developing and managing (only) four components and their interrelationships (cf. Figure 11):

- *The primary (operative, value-generating, self-reinforcing) processes:* To perform sustainable core activities which accomplish the purpose of the project. This is a daily, routine and common-sense activity of project management.

- *Operative control:* The project management steers (via feedforward, e.g., by setting milestones) and regulates (via feedback on achievement of targets and other indicators) the ensemble of the project's primary processes. It therefore periodically reviews its performance with an eye to the efficiency of the project's value creation. Another task of operative control is to deal, in a proactive mode, with disturbances of the primary process which originate from the project's environment. Finally, direct links with the

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[14] This Process Control Model is based on the Viable System Model (Beer, passim). For extended reading, we recommend: Beer, 1985; Espejo/Schuhmann/Schwaninger, 1996.

primary sub-processes, in the sense of coordinative, auto-organizing and anti-oscillatory as well as auditing functions, are needed (dotted lines; for a more detailed discussion, cf. Schwaninger 2000).

- *A strategy and development function:* The main task involved here is to develop and continually update a model of the project's environment and the project's interaction with it. From this, working hypotheses on the project's impact are derived. These lead to the definition and further development of, firstly, the project's longer-term goals and structures - e.g., formulated in concept papers, working manuals, etc. - and, secondly, value-potential generating activities in training, organizational improvement, etc.

- *A normative function:* The project management must ensure that on the one hand the strategies and goals of the project are coherent with its over-riding principles, values and norms and that, on the other, the aforesaid principles as well as the project's structural foundation are aligned with the priorities and dynamics of the larger system of which the project is a part.

This tool capitalizes on both the concept of primary processes introduced in Section 2 and on the Three-Level-Model of Management introduced in Section 3.3.

Systemic process control does away with the traditional comprehensive project plans ('plan of operations') which try to anticipate details down to a level of resolution which is unrealistic. However, our proposition does not at all imply that planning is superfluous. On the contrary: The more uncertain the process is, the more important good planning becomes. However, planning in this sense no longer means laying down fixed tracks into the future. Plans are - in one form or another - developed for each level of recursion, and within those in a different form for the three logical levels. Plans are conceived as hypotheses upon which project management bases its decisions, and are successively reviewed. Therewith, planning becomes a vital instrument for continual adaptation and learning.

The model also disposes of the classical 'Monitoring and Evaluation' function as a specific set of activities (dotted lines). Decision-making and the on-going evaluation of the impact of these decisions are seamlessly integrated as the principal task of project management.

This transparent structuring of the project management process into a small set of main components and their relationships allows one to simplify and strengthen the management system by concentration on its essentials, thereby elegantly "reducing it to the max". It not only lessens the need for

time-consuming exercises in planning and monitoring, but also renders the project more flexible and project documents more realistic and valuable. It thus generally eases the strain on project management.

Example: Addis Ababa

The management process is based on a minimal set of components:

- *Primary process:* The causal loops of 'more money' and 'more legitimacy' (see Section 2) are identified as the project's primary processes, towards which considerable effort is directed. The strengthening of these loops creates tangible and immediate benefits for partners and target groups. They provide a solid and sustainable basis for the project's operation.

- *Operative control:* The management team performs a three-monthly, encompassing review of the project status, based on 'hard' indicators of target achievement as well as on 'soft' indicators such as the level of motivation of staff and partners. On a one-page sheet, the assessment and the identification of key constraints are summarized. Thereupon, milestones are set for the three consecutive months to come and for a six-month outlook. Also, mechanisms of co-ordination such as budget, information system as well as a monitoring process to validate formal information via informal communication, are in place.

- *Strategy and development function:* The main mechanism for this is the updating of the model of urban governance already introduced (cf. Figure 2), complemented by a specification and further development (or reinterpretation) of the main outputs of the projects as regards its terms of reference. Resource allocation to the project as well as its 'mandate' are constantly negotiated with the project's supervisory board.

- *Normative function:* Periodic (yearly) review and supplementary feedback from outsiders, an on-going, open debate within the project on its 'philosophy' as well as constant reflection and cultivation of the project's professional culture are used to ensure coherence and alignment at the normative level. At the same time, the project management promotes the creation of a highly competent institution, close to the urban policy-making level, to promote better urban governance and management.

The project's planning had already undergone major revisions within less than eighteen months of operation, owing to the strong dynamics of urban policy development in Addis Ababa. One year later (autumn 2000) major innovations, such as a relatively broad participation of the population in the planning process[15] had been achieved. The simplicity and effectiveness of its control system has not only enabled the project

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[15] In spring 2000, an exhibition about the MPRP was visited by 50'000 people, and about 1'500 persons participated in hearings on the subject of urban planning in Addis Ababa. Both opportunities were used to interview large numbers of people about their ideas and needs.

management to keep abreast of those changes, but to be pro-active in setting mid-term milestones which would encourage positive changes, and grasping unforeseen opportunities for synergistic and highly leveraged action.

6. Enabling Self-organisation: Relationship Model

A common denominator of organizational change and development projects is that the relationship between clients and advisors is both sensitive and critical. Experience shows that it is difficult to maintain an optimal balance of distance and proximity between the client and the advisory systems. The optimum balance is achieved if the advisory system is close enough to provoke ("irritate"), and thereby guide the client system, without getting too close to be able to criticise.[16]

In this context, the notion of circularity is again useful: Systemic thinking directs our attention to those processes which are logically circular, in that the originator of a process or intervention is at the same time its target. In organizations, those 'self-referential' processes are much more powerful than conventional thinking assumes.

"Help to self-help", taken as a systemic concept relies on the distinction between three types of reference:

- self-reference of the partner organisation / target group ('client system')

- self-reference of the project ('advisory system')

- reference of the project to the partner organisation / target group.

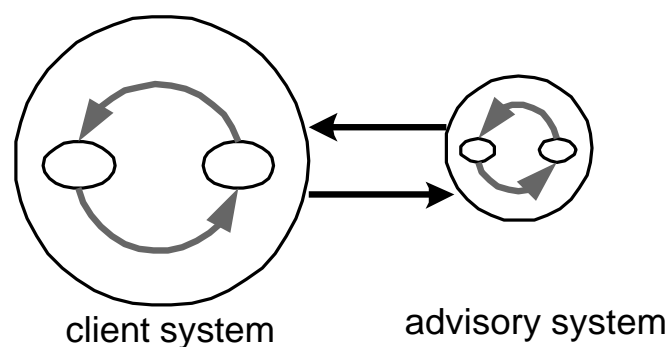These three types of reference can be located in the Relationship Model (Figure 12).

client system   advisory system

Figure 12: Relationship Model

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[16] Cf. inter alia Königswieser / Exner 1998, p. 19 ff, and Sülzer/Zimmermann 1996, pp. 318 ff

This model illustrates the following systemic insights:

- The relationship between advisory system and client system is made up of interventions. The client system, in its operational mode of self-reference, can either 'accept' or 'refuse' any intervention. Therefore, it is crucial that each intervention should be individually customized and monitored.

- The advisory system appears 'alien' to the client system. This is a constraint. But it is also an advantage in that it is often easier to suspend taboos of the client system. Furthermore, by providing multiple perspectives on current issues of the client system, the horizons are expanded and innovation is more likely to occur. [17]

- The advisory system cannot solve the problems of the client system. Rather, the need to reinforce eigen-problem-solving of the client system[18] is emphasized.

The utility of this conceptual tool lies in the fact that it makes the crucial principle of "help to self-help" operational: The capacity for 'self-help' is embodied in the primary process loop of the client system, whereas 'help' is embodied both in the particular interventions of the advisory system as well as its self-referential process loops. The latter are due to the institutional character of 'help' and ensure these interventions' endurance. From this synergetic kind of extrinsic and intrinsic help, the emergence of new systemic properties such as robustness, viability and development should become more likely.

Example: Addis Ababa

The *Relationship Model* is for example used in the following ways:

1. Contrary to conventional practice, there is no joint plan of operation between the change project and the City Government (advisory and client system respectively); on the contrary, the change project sees itself to some degree as an external agent with a limited influence on the city administration's ongoing processes. The project principally designs its activities as interventions, often with quite a short time-horizon. The impact of these interventions is continuously monitored, and their design, sequence and timing adjusted in an ongoing mode.

2. The alienness of the change project – and especially its foreign component - has been instrumental in accessing information which is not easily passed on between organizational units of the client system. Also, new ideas as well as bad

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[17] This concept revolves around what in German is termed "beraterische Distanz".

news are often conveyed more credibly by an 'outside' advisor than by a member of the client system.

3. The change project does not try to solve the problems of the City Government as such. Rather the project's resources are used to strengthen the City Government's problem-solving capacity by reinforcing its "vital" processes.

7. Synopsis and Outlook

The aim of this paper was to help project managers to enhance their capability of dealing with complex change and development projects effectively.

For this purpose, we have explored the potential of organizational cybernetics and systems theory to support the management of complexity, from the specific perspective of project organization and leadership. We have come up with a set of conceptual tools. Despite the paucity of these tools, the fact that they are bound together by an inherent logic makes them powerful devices for dealing with the dynamic complexity as confronted in change and development projects.

We have tried to outline this cogent logic along the lines of our presentation, and illustrated each tool by reverting to the manifold aspects of one highly complex, state-of-the-art case. The purpose of that project-in-focus is a revision of the Urban Master Plan for the City of Addis Ababa, Ethiopia. Given its complexity and the formidable challenge of its endeavor, this is a good case in point. However, as the toolkit presented deals with the invariances inherent in any complex change and development project, applications to a great variety of other cases would be possible and potentially fruitful.

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[18] Eigen-problem-solving means dealing with issues autonomously. A systemic approach to autonomy includes being aware of the interdependencies with other units, and respecting their autonomy.

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